



# Building Career and Technical Programs that Work!

VariQuest®



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# I. Introduction: Why CTE?

The case for more robust Career and Technical Education (CTE) is not just strong, it's obvious. In this playbook, we show you how to build CTE programs that engage students across nearly every subject matter. By emphasizing skills needed for real-world jobs like engineering, graphic design, teaching, business management, and so much more, CTE combines the arts, mathematics, history, natural and social sciences, and language arts with vital skills for success in the 21st-century world.

An effective CTE program will ensure your students are not only learning their coursework but also applying that knowledge, thereby transferring what they are learning in the classroom directly to their future careers. This instills students with an education that is engaging, long-lasting, and adaptable to our world today.

The following details what you should do to create the best CTE programs for your school or district. We hope that you can use this as an actionable resource in creating CTE initiatives that give your students the 21st-century skills they need for college and career-success!



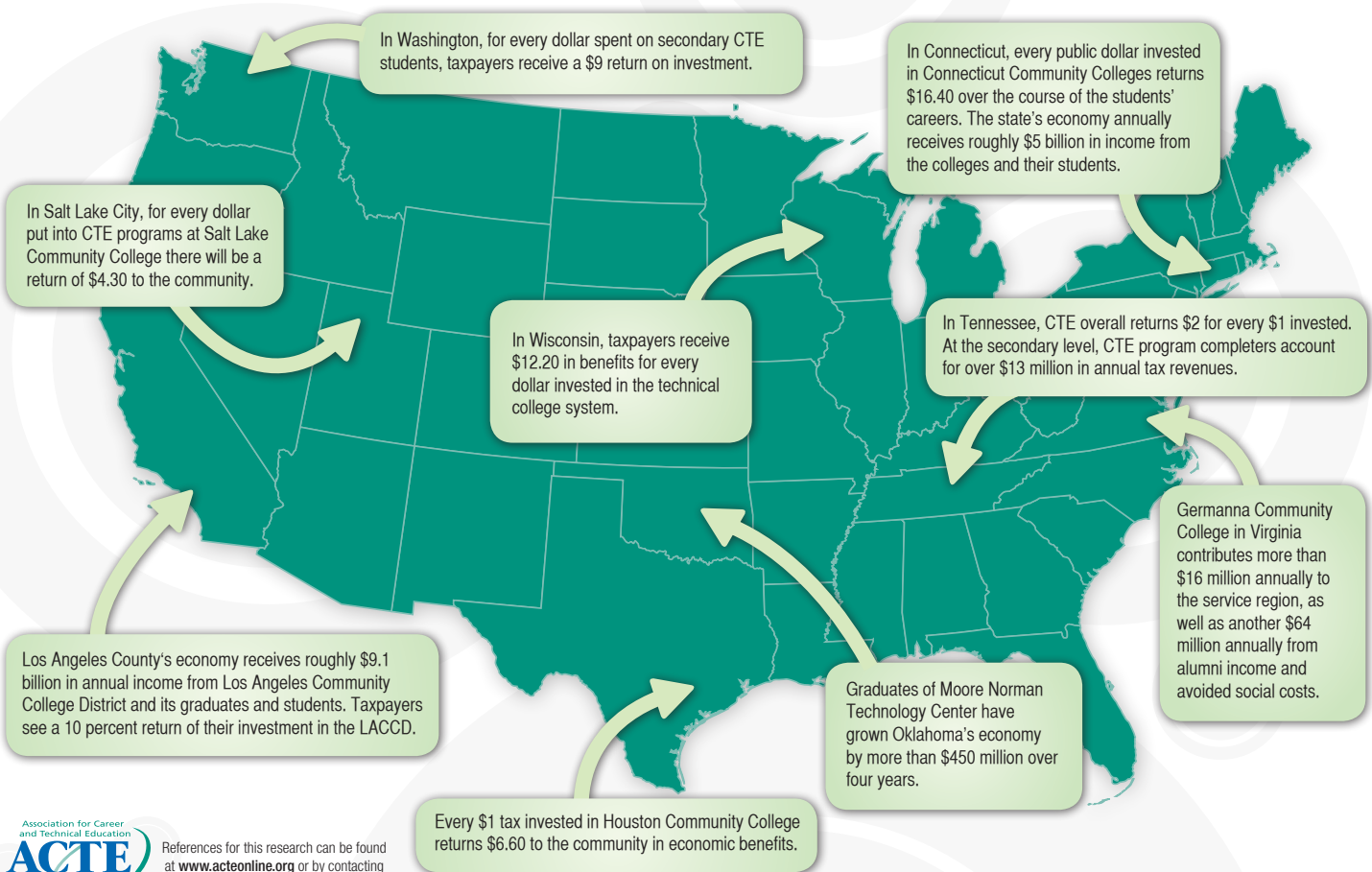
**There is no better way to improve student performance and engagement, to ready the new generation for college and career in the 21st-century, and to provide valuable services to the high school through student-led organizations than utilizing CTE programs.**

## II. Determine your Capacity for a CTE Program

Given the many demands on administrators, educators, and students in secondary education, you may have some objections to overcome when it comes to increasing the focus on CTE coursework and programs. With the huge returns CTE provides, it's crucial to fit into your high school curriculum. In Salt Lake City, every dollar spent on CTE programs ensures a return of \$4.30 back to the community. In Wisconsin, taxpayers receive \$12.20 in benefits for every dollar spent on CTE in their districts. That kind of return on investment in our communities is too important to pass up.

You may be considering whether you have the right staff, resources, funding, student enrollment, and nearby postsecondary support for a CTE initiative. We are here to tell you that you do!

### Investing in Career & Technical Education Yields Big Returns



References for this research can be found at [www.acteonline.org](http://www.acteonline.org) or by contacting [cimperatore@acteonline.org](mailto:cimperatore@acteonline.org)

## Facility

Many hold the view that CTE is the old “vo-tech” space they were familiar with during their own school years. The challenge is changing that image - and making the CTE classroom space convey high-tech, high-value learning. The ACTE offers these tips on building a workspace to break the mold.

- *Simulate a work environment*  
Students are more engaged when surrounded by real-world reinforcement paired with hands-on, sensory experiences.
- *Create flexibility*  
Technology is constantly changing, and thus your space should allow for evolution of its use and reconfiguration of its layout and focal points over time.
- *Integrate technology through layering*  
Consider mobility within the space, and planning for newer models of hardware and replacement technology as older items become obsolete.



## Staff

Quality staff is essential in any CTE program, and ongoing professional development is vital to educators to ensure dynamic, cutting-edge CTE instruction. Check out this link to access helpful resources to keep your staff on top of current trends: [CTE Clearinghouse: Professional Development](#)

## Emphasize all that CTE has to offer.

Unfortunately, some still view CTE as only connected to trade schools or narrow career tracks. This is far from the case. CTE encompasses a myriad of career and academic paths (see Section III of this playbook for more on the 16 career clusters associated with CTE) and pulls from a number of subjects to prepare students for their future professions.

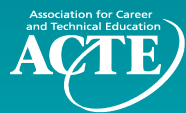
The Association for Career and Technical Education ([ACTE](#)) reports that

- Taking one CTE class for every two academic classes minimizes the risk of students dropping out of high school
- 91 percent of students who earned 2-3 CTE credits in high school go on to enroll in college
- Half of all STEM jobs call for workers with less than a bachelor's degree



VariQuest has combined the power of STEM education and CTE training with their Trifecta™ 800 3D printer in an exciting new curriculum created by STEM Fuse, a premier developer that offers unmatched 21st-century skill-building. For more information, please visit the [Trifecta & STEM:IT](#) resource page!

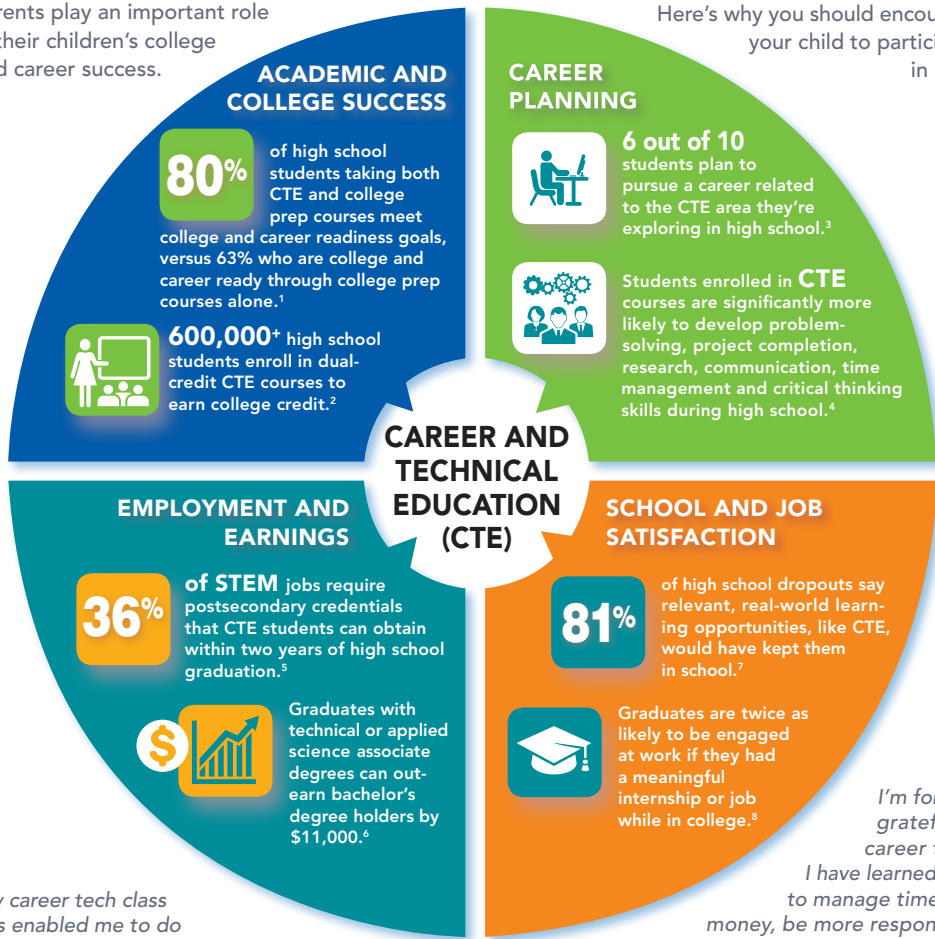
Keeping your students more engaged not only sets them up for future success, but also improves performance in their current academic coursework, by illustrating the utility of those skills through their hands-on CTE learning. ACTE also found that “students enrolled in CTE courses are significantly more likely to develop problem-solving, project completion, research, communication, time management, and critical thinking skills during high school.”



## Career and Technical Education Improves Student Achievement in High School, College and Career

Parents play an important role in their children’s college and career success.

Here’s why you should encourage your child to participate in CTE.



**CAREER AND TECHNICAL EDUCATION (CTE)**

*My career tech class has enabled me to do something I love and opened my eyes to possibilities that are ahead.* – Kelsey McClure<sup>9</sup>

*I’m forever grateful to career tech. I have learned how to manage time and money, be more responsible and support myself while being reliable to other people.* – Zachary Zigler<sup>10</sup>

<sup>1</sup> Southern Regional Education Board, <sup>2</sup> Thomas et al. 2013, National Center for Education Statistics, <sup>3</sup> NRCCUA<sup>®</sup> and ACTE 2016, <sup>4</sup> Lekes et al. 2007, National Research Center for CTE, <sup>5</sup> Rothwell 2013, Brookings Institution, <sup>6</sup> Schneider 2013, College Measures, <sup>7</sup> Bridgeland et al. 2006, Civic Enterprises, <sup>8</sup> Gallup-Purdue Index report, <sup>9</sup> Ohio Department of Education Career-Technical Education Success Stories, <sup>10</sup> Ibid.



At Carver Magnet High School in Houston, Texas, La’Jasha Champion won a prestigious award at the Business Professionals of America (BPA) State Conference for her design and production of a **3D-printed statue**. Starting off with almost no experience in the tech and engineering world, La’Jasha designed an innovative sculpture of two young women running up or down hill, depending on your perspective. In order to execute her design, La’Jasha taught herself how to model and code her sketch for use with the **VariQuest Trifecta 3D printer**.

Imagine how much students will excel in any subject matter when these skills are sharpened. CTE programs are an asset to any high school, teacher, subject, skill, and—most importantly—student!



***Explore available funding options and fundraising opportunities.***

Often administrators and educators are hesitant to integrate CTE initiatives into their curriculum due to budget constraints, but many are unaware of all the resources available to schools and districts specifically earmarked for CTE funding!

VariQuest offers a comprehensive breakdown of the different funding sources available to start and sustain CTE initiatives. These funding sources include taking advantage of programs like Titles I-V, Carl D. Perkins, Literacy + STEM Grants, Charter Schools Program Funding, and more.



To see the breakdown of CTE funding sources from VariQuest in its entirety, visit our [funding resources](#) page!

There are also a number of private and state grants that are either specifically designed for CTE programs or can be applied to those ends. Some of these include:

- **Innovation Grant:** Expansion or enhancements of state-specific CTE programs already in place along with new innovative programs (STEM, 3D Printing, etc.)
- **Lottery Grant:** State CTE grants where the funding comes from the state's Lottery Education Trust.
- **Enhancement Grant:** Enhancing current CTE programs along with new CTE programs that promote innovation.
- **CTE Demonstration Project Grant:** A competitive state grant to fund expenses associated with the planning, development and implementation of a new or expansion of existing high school CTE programs

In addition, visit the [U.S. Department of Education's Grants](#) website to find other federal grants, or more opportunities in your state. With a bit of research, you can stay on top of the opportunities available for your school or district's CTE initiative – and be sure to keep the community informed of your efforts, as you never know when a generous citizen or group will take an interest in your school!



With the assistance of funding from an anonymous donor, the Career Academy in Lincoln, Nebraska was able to purchase the full suite of VariQuest Products, which they used to initiate a number of exciting CTE programs. Students have used the VariQuest printed materials to inspire productive classroom discussions with an interactive bulletin board, start a student-led bumper sticker and customized water bottle business, and develop marketing materials to promote their business products.



Want to see other exciting things you can accomplish with VariQuest products? [Click here](#) to see everything in the VariQuest Tool Kit!

***Coordinate with local postsecondary colleges and technical schools to set your CTE initiative up for maximum success.***

Increasing CTE skills in high school students not only benefits the secondary schools they attend, it also provides postsecondary schools and institutions, and the community at large, with young adults who are more prepared to learn and advance their career-oriented skillsets. Working with community, four-year, and technical schools can give you valuable insight into what standards students hoping to enter these institutions will need to meet.

The Career Academy is a great example of this type of collaborative work in education that sets students up for long-term career success. It is a joint venture between Lincoln Public Schools and Southeast Community College, with a goal to provide local high school juniors and seniors with dual credit courses (for both their current secondary coursework and future college credit) in 16 different career pathways. By partnering with a local postsecondary school and obtaining funding for the full VariQuest product suite, the Career Academy has been able to increase the number of students continuing their education post-high school while enhancing the employable skills of all their students.

### III. Build Quality CTE Programs Around the 16 Career Clusters



**The most effective CTE programs incorporate the 16 career clusters that define the 21st-century workplace.**

**They include jobs in:**

- Health Sciences
- Environmental and Agricultural System
- Industrial
- Manufacturing, and Engineering Sectors
- Communication and Information Systems
- Business, Marketing, and Management
- Human Services and Resources

While the specific job requirements will vary within and between different career clusters, they have a common core of knowledge and skills needed for success in any of these fields or occupations. These include:

- Academic Foundations
- Communications
- Employability and Career Development
- Ethics and Legal Responsibilities
- Information Technology Applications
- Leadership and Teamwork
- Problem Solving and Critical Thinking
- Safety, Health, and the Environment
- Systems
- Technical Skills

Your school or district should be incorporating specific aspects of these career clusters into your CTE programs, along with the central learning objectives listed above. There are some helpful steps you can take in order to address these competencies and job requirements in your CTE programs. Focusing on standards-aligned curriculum, specific career paths and needs in your community, and student-led organizations will help you build the effective CTE initiatives that your students want—and need!

### **Advisory Committee**

Build a panel of advisors to influence your CTE program curriculum, with representatives holding experience from each of the offerings' fields of study. They could include parents, students, teachers, career counselors, representatives of labor organizations, or others - holding firsthand, practical knowledge of the subject matter.

### **Align your curriculum with 21st-century career- and college-readiness standards.**

The **Osseo Area School District 279** did just that when it created its curriculum for the Community-Based Vocational Assessment and Training (CBVAT) program for high school students with special needs. Thanks to grants and funding available for special education programs (for more on Grants and Funding jump back to Section II), CBVAT was able to purchase VariQuest Tools and engage their students in designing, creating, selling, delivering, and advertising greeting cards, parking passes, posters, and award plaques - while developing their skills in computer usage, project management, digital design, and building on traditional academic concepts like math and literacy. The program has increased the confidence and overall preparedness of its students for life after high school.



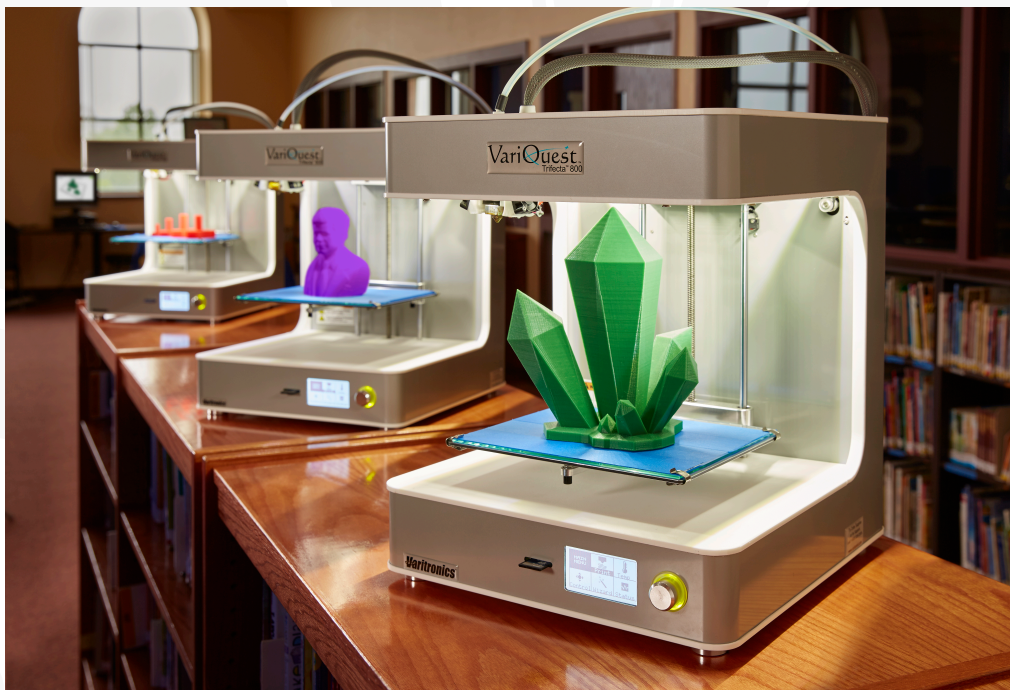
**Download the free infographic [The Benefits of Taking a Kinesthetic Approach to STEM](#) for more about what the CREATE package can do for your students!**

In addition to providing amazing tools for you to use when crafting your own CTE programs, VariQuest offers CREATE- a package that includes the Trifecta™ 800 3D printer and STEM:IT curriculum. This unique offering exposes and prepares students with a variety of focused skillsets related to potential careers.

The STEM:IT curriculum includes:

- **CTE Prep** by exposing students to a wide variety of easy-to-use and engaging tools, concepts, and skills related to the CTE career pathways above
- **Career Exposure** by ending all middle and high school curriculum with a career reflection lesson, in which students must connect the skill, tools, and processes they utilized in the STEM:IT program to actual careers that they could have
- **Makerspace Activities** by giving students digital and interactive instruction that works across any device and includes over 80 different 3D print projects

However far along you are in developing a CTE initiative in your school or district, students will flourish from the comprehensive CTE benefits that the ready-made STEM:IT curriculum and Trifecta 800 3D printer offer.



**Identify specific needs and career paths in your community and gear your CTE efforts in that direction.**

Like we've mentioned, CTE programs not only benefit your students' futures; they also improve the overall school and district culture by going above and beyond academics. Your CTE initiative can take the shape of:

- Job Shadowing
- Volunteering
- Community Service
- Unpaid/ Paid Internships
- College Credit



At [Venice High School in Florida](#), the CTE initiative was geared toward addressing certain graphic design needs for the school. “Indian Ink” was born—a student-led entrepreneurial design and print shop organization for the school. Using VariQuest tools, the students serve the school and the community with affordable, high-quality designs and prints. Similarly, in Washington State, Clover Park High School is promoting their CTE program using VariQuest Tools to start a customized bumper sticker company run by students. The students learn accounting and business management, and also a valuable and fun skill that requires organization and creativity!

In addition to business ventures that help address a market need, CTE programs can also be directed toward particular career pathways. For example, Freed-Hardeman University in Henderson, Tennessee integrated more CTE emphasis into their school with coursework designed to increase interest among students in becoming future educators. In the program, students rely on VariQuest Tools to create important learning aids, visuals, and assignments for their K-12 lesson plans. The addition of CTE and hands-on engagement with products like those offered by VariQuest takes learning about various career pathways from theoretical to concrete – by providing students with actual training and experience.



Read more about how CTE was able to prepare students to become future educators in our blog post [Supporting Future Educators with VariQuest Visual Learning Tools](#).



***Ensure your CTE programs mimic real life demands by encouraging student-led CTE organizations and participation.***

Assigning your students responsibility in running a CTE initiative, organization, or business concept is a natural way to foster their engaged learning.

All of the CTE student-led organizations that we have mentioned—like Indian Ink at Venice High School or Clover Park’s bumper sticker business —required students to learn a trade like design or print-making. Having them run and operate the organization allowed them to develop skills in accounting, organizing and submitting invoices, balancing budgets, providing customer service, ordering supplies, and other real-life business operations.



After receiving an Enhancement Grant (again, if you’d like a refresher on CTE funding opportunities, jump back to Section II of the playbook), [Otterville High School](#) in rural Missouri partnered with the school’s Future Business Leaders of America (FBLA) chapter to encourage student leadership through a CTE initiative. The customized flyers and marketing collateral they produced using VariQuest Tools fuel their school’s advertising needs so well, they now receive orders from neighboring schools for their poster and design needs.

## IV. Conclusion

If you are still looking for more direction, or want additional information about how VariQuest Visual and Kinesthetic Learning Tools can work with your CTE initiative to support all 16 career pathways, [contact us today!](#)



# VariQuest®

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